Work Order ID 62056

Wednesday, September 15, 2010 1:29:04 PM

Item ID: D3624-2 **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Bubble Window

Start Date: 9/15/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 9/22/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** N **Date:** 10-9-15 **Tooling:** _____ **Date:** _____ **Run Start**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
Draw Nbr	**Revision Nbr**								
D3624	Rev D								
100	HAND FINISHING THERMOFORMING	0.00				1			10/09/20
Thermoform	**Memo**	0.00							
Thermoforming Machine	Cut Blanks to 30" by 48"								
110	THERMOFORMING MACHINE	0.00							
Thermoform	**Memo**	0.00							
Thermoforming Machine	Thermoform as per Dwg. D3624 and Folio FTA 004 □Dwg. Rev. D □Folio Rev. D								
120	QC2- Inspect parts off machine FAI/FAIB	0.00							
QC	**Memo**	0.00							
Quality Control	Check Surface finish for undesired marks, voids, dimples etc. Check depth of bubble to ensure conformity to drawing tolerances.								

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE

Work Order ID 62056

Wednesday, September 15, 2010 1:29:04 PM

Item ID: D3624-2 **Accept** **Setup Start**

Revision ID:

Item Name: Bubble Window **Stop**

Start Date: 9/15/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 9/22/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____ **Run Start**

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____ **Stop**

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
130 Thermoform Thermoforming Machine	HAND FINISHING THERMOFORMING **Memo** 1) Trim to Finished Dimensions □2) Buff out any light scratches or blemishes□3) Etch in part number and batch number	0.00 0.00				Dh.	(x1)	10/09/21	
140 QC Quality Control	QC2- Inspect parts off machine FAI/FAIB **Memo**	0.00 0.00				Dh.	(x1)	10/09/21	
150 QC Quality Control	QC5- Inspect part completeness to step on W/O **Memo**	0.00 0.00				(x0)			

Sio/09/21

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE

Work Order ID 62056

Wednesday, September 15, 2010 1:29:04 PM

Item ID: D3624-2 **Accept** **Setup Start**

Revision ID: **Stop**

Item Name: Bubble Window

Start Date: 9/15/2010 **Start Qty:** 1.00 **Cust Item ID:**

Required Date: 9/22/2010 **Req'd Qty:** 1.00 **Customer:**

Reference:

Run Start

Approvals: **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____

Stop

QC: _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
160	Identify as per dwg & Stock Location 176	0.00							
Packaging	Memo	0.00				10/9/24			
Packaging									
170	QC21- Final Inspection - Work Order Release	0.00							
QC	Memo	0.00					10/09/24		
Quality Control									

MF
10-9-24

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE

Picklist Print

Wednesday, September 15, 2010 1:29:08 PM

Work Order ID: 62056

Parent Item: D3624-2

Parent Item Name: Bubble Window

Start Date: 9/15/2010 **Required Date:** 9/22/2010

Start Qty: 1.00 **Required Qty:** 1.00

Comments:
IPP A Thermoform in house 6/27/2007 DL
IPP B. Revised due to corrupt operating Program. 7/23/2007 DL
IPP C. Dwg. Rev. change 7/30/2007
IPP D. Dwg. Rev. Updated 4/25/2008 verified by:DD

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
MACRYLICS.177		Purchased	No				sf	249.8722	10	10.00500			
0.177" PLEXIGLAS G CLEAR CAST ACRYLIC SHEET													

Location	Loc Qty	Loc Code			
therm	249.8722				
107291	24				
111315	54				
115234	171.8722		1	BB	10/09/20

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE

DART AEROSPACE LTD	Work Order:	42054
Description: Bubble Window (A119)	Part Number:	D3624-2
Inspection Dwg: D3624 **Rev:** D		Page 1 of 1

FIRST ARTICLE INSPECTION CHECKLIST

[X] First Article [ ] Prototype

THERMOFORMING SECTION

Description	Accept	Reject	Method of Inspection	Comments
Bubble Depth within tolerance	✓			
Shape Definition	✓			
Material imperfections such as bumps, cracks, voids, scratching	✓			

Measured by:	DL	Date:	10/09/20

TRIMMING SECTION

Drawing Dimension	Tolerance	Actual Dimension	Accept	Reject	Method of Inspection	Comments
11.0	+/-0.25	11.06"	✓			
3.0	0.095 Min	0.106"	✓			
8.5	0.058 Min	0.077"	✓			
3.0	0.060 Min	0.098"	✓			
8.5	0.042 Min	0.068"	✓			
2.5	0.030 Min	0.057"	✓			
92°	+/-0. 2° Min	92°	✓			
90°	+/-0.2° Min	90°	✓			
0.85	Min	0.93"	✓			
0.70	Min	0.78"	✓			

Measured by:	DL	Date:	10/09/21
Audited by:	S	Date:	10/08/21
Prototype Approval:		Date:	

Rev	Date	Change	Revised by	Approved
A	08.11.28	New Issue	KJ/DL	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

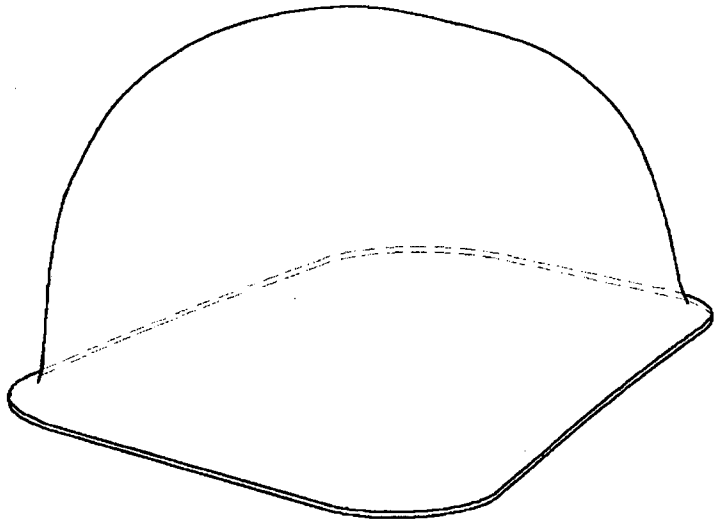
Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

Resolution: _____ Disposition: _____ QA: N/C Closed: _____ Date: _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE



SHOP
UNCONTROLLED
SUBJECT TO
WORK ORDER
NO. 62054
10-9-25

D3624-2 BUBBLE WINDOW

RELEASED
08.03.25

NOTES:

1) MATERIAL: PLEXIGLAS G CLEAR CAST ACRYLIC SHEET PER LP-391 TYPE 1 GRADE C
OR POLYCAST II CLEAR ACRYLIC SHEET PER MIL-P-5425
0.177 TO 0.188 THICK (STOCK, REF DART SPEC M-ACRYLIC-S)
2) FINISH: NONE
3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
4) UNITS: INCHES UNLESS OTHERWISE NOTED
5) BREAK SHARP EDGES: 0.010 TO 0.020 MAX
6) IDENTIFICATION: ENGRAVE P/N & B/N ON FLANGE WITHIN 0.25" OF BUBBLE. USE 0.125" LETTERS TO MAX DEPTH OF 0.005".
7) WEIGHT: 2.95 lbs
8) FORM PER DT8953 AND QSI 022
FORMING PROCESS: (a) DRAPE OVER DT8953 MOLD
(b) HEAT TO 290°F
(c) VACUUM FORM TO SPECIFIED HEIGHT
(d) LET COOL TO AT LEAST 100°F BEFORE HANDLING
(e) TRIM FLANGE USING DT8954

REV.	DESCRIPTION	BY	DATE
D	REDRAW, REFORMAT, RMV SHAPE TOOL, ADD SEC B-B (2C8) & C-C (2C3), ADD FLANGE & WALL & WALL ANGLE DIMS, UPDATE MAT'L SPEC (1B8)	CP	08.03.12
C	ADD TOOL TO CONTROL BUBBLE SHAPE	CP	07.06.27
B	11.0" DEPTH WAS 12.0"	CP	07.05.24
A	NEW ISSUE	CP	07.06.27

DESIGN		**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA	
DRAWN			
CHECKED		DRAWING NO.	REV. D
MFG. APPR.		D3624	SHEET 1 OF 2
APPROVED		TITLE	SCALE
DE APPR.		BUBBLE WINDOW (A119)	NTS
DATE	08.03.12		

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

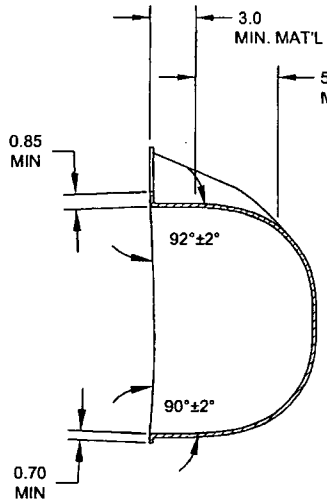
Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

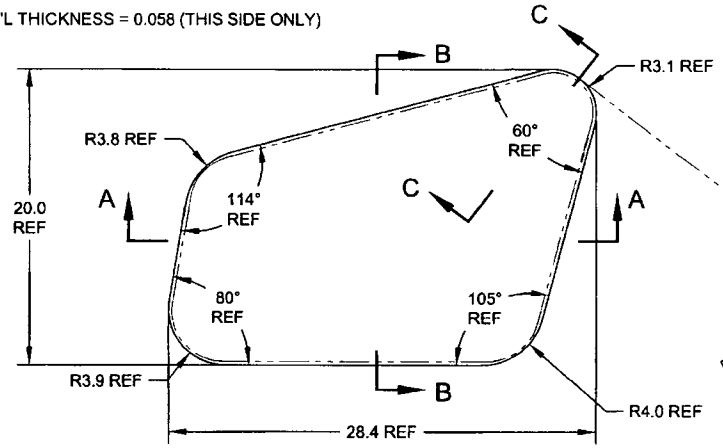
NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

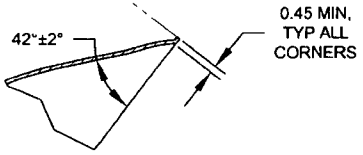
H:\fFORMS\Quality Assurance\approved QA\NCRWO RevE



SECTION B-B

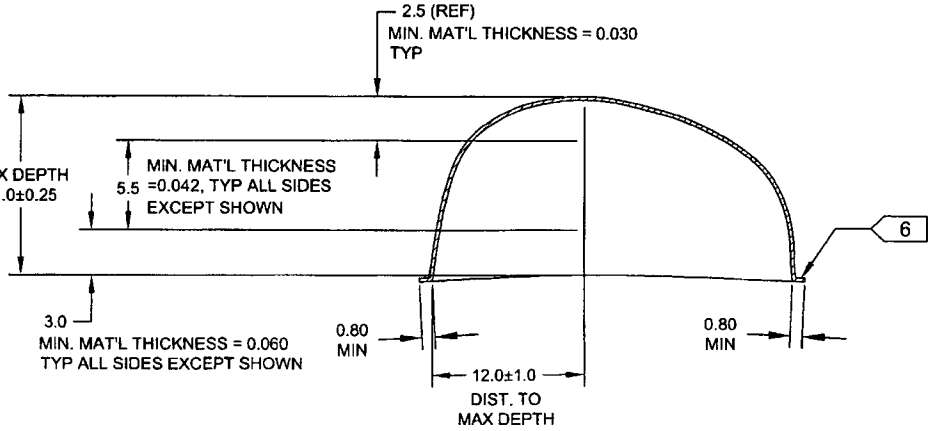


D3624-2 BUBBLE WINDOW



SECTION C-C

Pl 62054



SECTION A-A

08.03.25

DESIGN		**DART AEROSPACE LTD** HAWKESBURY, ONTARIO, CANADA
DRAWN		
CHECKED		DRAWING NO. D3624 — REV. D — SHEET 2 OF 2
MFG. APPR.		
APPROVED		TITLE: BUBBLE WINDOW (A119) — SCALE: NTS
DE APPR.		
DATE	08.03.12	

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ **PAR #:** _____ **Fault Category:** _____ **NCR:** Yes No **DQA:** _____ **Date:** _____

Resolution: _____ **Disposition:** _____ **QA: N/C Closed:** _____ **Date:** _____

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

H:\FORMS\Quality Assurance\approved QA\NCRWO RevE